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LERNER, DAVID, LITTERNBERG, KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090

EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	PAPER NUMBER
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/356,260	EIZENHOEFER ET AL.	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 July 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Amendment mailed on March 10, 2005. Claims 36 and 37 of the application were amended. Claims 20-38 of the application are pending. This office action is made non-final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 20-38 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3.1 Claim 20 states in part, "there further being provided a second type of control information, the method comprising:

partitioning the second type of control information into a number of sections **corresponding to the number of frames in the multi-frame**; and

transmitting with **each frame of the multi-frame**:

...

a section of the partitioned second type of control information".

This is in contrast to what the specification describes in Page 4, Lines 23-30 and it is new information introduced by the Applicants in the amendment of September 28, 2004. The specification states that "the speech coded data from step 101 is channel coded together with at least one additional bit derived from a multi-frame signaling step 102.... The additional bit from step 102 is a part of the three bit information used for coding additional signaling information. ... In this example, it takes **three frames within a multi-frame of six frames, as e.g. defined and used according to the GSM standard**, to transmit the coding mode information as within each frame only one of three bits is transmitted".

Therefore, "partitioning the second type of control information into a ***number of sections corresponding to the number of frames in the multi-frame***; and transmitting with ***each frame of the multi-frame*** a section of the partitioned second type of control information" is not supported by the specification.

3.2 Claim 29 states in part, "wherein ***each frame is transmitted with*** the first type of control information for the respective frame; and ***a section of a partitioned second type of control information"***.

This is in contrast to what the specification describes in Page 4, Lines 23-30 and it is new information introduced by the Applicant in the amendment of September 28, 2004. The specification states that "the speech coded data from step 101 is channel coded together with at least one additional bit derived from a multi-frame signaling step 102.... The additional bit from step 102 is a part of the three bit information used for coding additional signaling information. ... In this example, it takes three frames within a multi-frame of six frames, as e.g. defined and used according to the GSM standard, to transmit the coding mode information as within each frame only one of three bits is transmitted".

Therefore, "each frame is transmitted with a section of a partitioned second type of control information" is not supported by the specification.

3.3 Claim 32 states in part, "the communication device comprising:

partitioning means adapted to partition the second type of control information into ***a number of sections corresponding to the number of frames in the multi-frame***;

transmitter means adapted to transmit with each frame of the multi-frame:

...

a section of the second type of control information".

This is in contrast to what the specification describes in Page 4, Lines 23-30 and it is new information introduced by the Applicant in the amendment of September 28, 2004. The specification states that "the speech coded data from step 101 is channel coded together with at

least one additional bit derived from a multi-frame signaling step 102.... The additional bit from step 102 is a part of the three bit information used for coding additional signaling information. ... In this example, it takes three frames within a multi-frame of six frames, as e.g. defined and used according to the GSM standard, to transmit the coding mode information as within each frame only one of three bits is transmitted".

Therefore, "partitioning means adapted to partition the second type of control information into ***a number of sections corresponding to the number of frames in the multi-frame*** and transmitter means adapted to transmit ***with each frame of the multi-frame*** a section of the second type of control information" is not supported by the specification.

3.4 Claim 33 states in part, "wherein ***each frame is transmitted with*** the first type of control information for the respective frame; and ***a section of a partitioned second type of control information"***.

This "each frame is transmitted with a section of a partitioned second type of control information" is not supported by the specification, as described in Paragraph 3.2 above.

3.5 Claim 34 states in part, "the communication device comprising:

a first device having a partitioning means adapted to partition the second type of control information into ***a number of sections corresponding to the number of frames in the multi-frame***; and transmitter means adapted to transmit with each frame of the multi-frame ... a section of the second type of control information".

The "partitioning means adapted to partition the second type of control information into ***a number of sections corresponding to the number of frames in the multi-frame*** and transmitter means adapted to transmit ***with each frame of the multi-frame*** a section of the second type of control information" is not supported by the specification, as described in Paragraph 3.3 above.

3.6 Claim 37 states, "A multi-frame transmission communication system according to claim 34 wherein there is an ***uplink established from the second device to the first device"***.

Claim 34 states in part, "a first device having a partitioning means ... and transmitter means adapted to transmit ...; and a second device having a receiver means ...".

Therefore the claim implies that the uplink goes from ***the receiver to the transmitter,*** which is in contrast to accepted convention in GSM system where the uplink goes from the mobile part to the fixed part. This is also stated in the specification, Page 5, Lines 20-22, "...for the above described transmission direction from the fixed part to the mobile part (downlink) the transmission direction is reversed to the direction from the mobile part to the fixed part of the network (uplink) ...".

Referring to Fig. 3 of the specification and the description for the fixed part 1, and mobile part 2, (Page 8, Lines 1-2; page 8, Lines 25-26), each part has a partitioning and coding means (part 10 of the fixed part and part 20 of the mobile part, Page 8, Lines 4-7 and Page 8, Line 28 to Page 9, Line 2); and each of the fixed and mobile part has a transmitter means (parts 14 and 15 of fixed part 1 and parts 24 and 25 of mobile part 2, Page 8, Lines 9-12 and Page 9, Lines 5-7. Each of the fixed and mobile parts has a receiver means (part 25 of the mobile part, Page 8, Line 13; part 15 of the fixed part, Page 9, Line 9). Therefore, claiming that there is an ***uplink***

established from the second device to the first device is incorrect, as the uplink is established from the mobile part to the fixed part, where each part has a partitioning means, a transmitter means and a receiver means.

Therefore, "there is an ***uplink established from the second device to the first device***" is not supported by the specification.

3.7 Claim 38 states, "A multi-frame transmission communication system according to claim 34 wherein there is ***downlink established from the first device to the second device"***.

Claim 34 states in part, "a first device having a partitioning means ... and transmitter means adapted to transmit ...; and a second device having a receiver means ...".

Therefore the claim implies that the downlink goes from the transmitter to the receiver, which is in contrast to accepted convention in GSM system where the downlink goes from the fixed part to the moving part. This is also stated in the specification, Page 5, Lines 20-22, "...for the above described transmission direction from the fixed part to the mobile part (downlink) the transmission direction is reversed to the direction from the mobile part to the fixed part of the network (uplink) ...".

Referring to Fig. 3 of the specification and the description for the fixed part 1, and mobile part 2, (Page 8, Lines 1-2; page 8, Lines 25-26), each part has a partitioning and coding means (part 10 of the fixed part and part 20 of the mobile part, Page 8, Lines 4-7 and Page 8, Line 28 to Page 9, Line 2); and each of the fixed and mobile part has a transmitter means (parts 14 and 15 of fixed part 1 and parts 24 and 25 of mobile part 2, Page 8, Lines 9-12 and Page 9, Lines 5-7. Each of the fixed and mobile parts has a receiver means (part 25 of the mobile part, Page 8, Line

13; part 15 of the fixed part, Page 9, Line 9). Therefore, claiming that there is ***downlink established from the first device to the second device*** is incorrect, as the downlink is established from the fixed part to the mobile part part, where each part has a partitioning means, a transmitter means and a receiver means.

Therefore, "there is ***downlink established from the first device to the second device***" is not supported by the specification.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
>
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
>
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 20-22, 25, 29 and 32-34 are rejected under 35 U.S.C. 102(e) as being anticipated by **Roberts et al.** (US Patent 6,418,558).

5.1 **Roberts et al.** teaches hybrid fiber/coax video and telephony communication. Specifically, as per Claim 20, **Roberts et al.** teaches a method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the method comprising:

a. partitioning the second type of control information into a number of sections corresponding to the number of frames in the multi-frame (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36); and

b. transmitting with each frame of the multi-frame:

i. the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and

ii. a section of the partitioned second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9).

5.1.1 Claim 20 is also rejected under 35 U.S.C. 102(e) as being anticipated by **Balachandran et al.** (US Patent 5,881,105).

Balachandran et al. teaches system and method for the non-sequential transmission of control signals within a speech transmission. Specifically, as per Claim 20, **Balachandran et al.** teaches a method of transmission in a multi-frame system (Fig. 1; CL3, L34 to CL4, L2), each frame of the multi-frame system being associated with a first type of control information (CL1, L65 to CL2, L24); there further being provided a second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2); the method comprising:

a. partitioning the second type of control information into a number of sections corresponding to the number of frames in the multi-frame (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2); and

b. transmitting with each frame of the multi-frame:

i. the first type of control information for the respective frame (CL1, L65 to CL2, L24); and

ii. a section of the partitioned second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

5.2 As per Claim 21, **Roberts et al.** teaches the method of Claim 20. **Roberts et al.** also teaches that the second type of control information is for use on receipt of the multi-frame (CL30, L42-49; CL98, L62 to CL100, L21; Tables 9 and 10; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are

sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

5.2.1 As per Claim 21, **Balachandran et al.** teaches the method of Claim 20. **Balachandran et al.** also teaches that the second type of control information is for use on receipt of the multi-frame (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

5.3 As per Claim 22, **Roberts et al.** teaches the method of Claim 20. **Roberts et al.** also teaches on receipt of the multi-frames reforming the second type of control information (CL98, L62 to CL100, L21; Tables 9 and 10; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

5.3.1 As per Claim 22, **Balachandran et al.** teaches the method of Claim 20. **Balachandran et al.** also teaches on receipt of the multi-frames reforming the second type of control

information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

5.4 As per Claim 25, **Roberts et al.** teaches the method of Claim 20. **Roberts et al.** also teaches that the step of transmitting further comprises transmitting data with each frame (Fig. 13; Fig 9; CL36, L33-34; CL36, L43-46; CL38, L33-34).

5.4.1 As per Claim 25, **Balachandran et al.** teaches the method of Claim 20. **Balachandran et al.** also teaches that the step of transmitting further comprises transmitting data with each frame (Fig. 1; CL3, L34 to CL4, L2).

5.5 As per Claim 29, **Roberts et al.** teaches a method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); wherein each frame is transmitted with the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and a section of the partitioned second type of control information (CL30, L28-36; CL30, L42-49; CL98, L634 to CL100, L21; Fig 9); the method comprising:

receiving frames of the multi-frame and reforming the sections of the second type of control information into the second type of control information (CL98, L62 to CL100, L21).

5.5.1 Claim 29 is similar to claim 20 and 22 combined, having similar limitations. **Balachandran et al.** teaches claim 29 and all its limitations as described in Paragraphs 5.1.1 and 5.3.1 above.

5.6 As per Claim 32, **Roberts et al.** teaches a communication device for a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the communication device comprising:

a. partitioning means adapted to partition the second type of control information into a number of sections corresponding to the number of frames in the multi-frame (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); and

b. transmitter means adapted to transmit with each frame of the multi-frame:

i. the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and

ii. a section of the second type of control information (CL30, L28-41; CL30, L42-49; CL98, L24 to CL100, L21; Fig 9; as shown in Tables 9 and 10 of CL99, the control bits are

partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36).

5.6.1 Claim 32 is a device claim written using a means for language, having similar limitations as claim 1. **Balachandran et al.** teaches claim 32 and all its limitations as described in Paragraphs 5.1.1 above.

5.7 As per Claim 33, **Roberts et al.** teaches a communication device for a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); wherein each frame is transmitted with the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and a section of the partitioned second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig.9); the communication device comprising:

receiving means for receiving frames of the multi-frame and reforming means for reforming the sections of the second type of control information into the second type of control information (CL98, L62 to CL100, L21).

5.7.1 Claim 33 is similar to claim 32 combined with means for language form of claim 22, having similar limitations. **Balachandran et al.** teaches claim 33 and all its limitations as described in Paragraphs 5.6.1 and 5.3.1 above.

5.8 As per Claim 34, **Roberts et al.** teaches a multi-frame transmission communication system, each frame or the communication system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-36; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the communication system comprising:

a. a first device having a partitioning means adapted to partition the second type of control information into a number of sections corresponding to the number of frames in the multi-frame (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); and

transmitter means adapted to transmit with each frame of the multi-frame the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and a section of the second type of control information (CL30, L28-416; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); and

a second device having a receiver means adapted to receive frames of a multi-frame transmission from the first device, and means for reforming the partitioned second type of control information (CL98, L62 to CL100, L21; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is

inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

5.8.1 Claim 34 is similar to claim 32 combined with means for language form of claim 22, having similar limitations. **Balachandran et al.** teaches claim 34 and all its limitations as described in Paragraphs 5.6.1 and 5.3.1 above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558), in view of **Le Strat et al.** (US Patent 6,134,220), and further in view of **Balachandran et al.** (US Patent 5,881,105) and **Wan** (US Patent 6385,460).

8.1 As per Claim 23, **Roberts et al.** teaches the method of Claim 20. **Roberts et al.** teaches the transmission is in a downlink (downstream) of a communication system, the first type of control information representing synchronization information and various parameters such as path delay adjustment, initialization, activation, dynamic allocation messages, modem control messages etc applied to the downlink (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and the second type of control information representing multi-frame timing, out-of-band signaling and status and control messages associated with DS0 between Host digital terminal and the Integrated service unit (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9). **Roberts et al.** does not expressly teach that the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied to the downlink. **Le Strat et al.** teaches that the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied to the downlink (Fig. 9, Item 98; CL7, L40-42), as the fixed part (the base transceiver station) modifies the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and transmits to the mobile station information on the coding and transmission modes (CL7, L30-42); as per **Balachandran et al.** the GSM system uses the Fast Associated Control Channel (FACCH) to send control signals in-band with speech transmission

for quick communication between the base station and the cellular phone (CL2, L8-12); and as per **Wan** the mobile unit should be provided with the coding mode and key needed to decode and demodulate the information coming from the base station (CL6, L21-23). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Le Strat et al.** so that the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied to the downlink. The artisan would have been motivated because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes; the GSM system would use the Fast Associated Control Channel (FACCH) to send control signals in-band with speech transmission for quick communication between the base station and the cellular phone; and the mobile unit should be provided with the coding mode and key needed to decode and demodulate the information coming from the base station.

Roberts et al. does not teach that the transmission is in a downlink of a communication system, the second type of control information representing a coding mode to be applied in an uplink of the communication system. **Le Strat et al.** teaches that the transmission is in a downlink of a communication system, the second type of control information representing a coding mode to be applied in an uplink of the communication system (Fig. 9, Item 98; CL7, L40-42), as the fixed part (the base transceiver station) modifies the coding mode in each transmission direction based on the transmission quality in the mobile station to the base

transceiver direction and transmission quality in the base transceiver to mobile station direction and transmits to the mobile station information on the coding and transmission modes (CL7, L30-42); and as per **Balachandran et al.** when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages are divided into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Le Strat et al.** so the transmission is in a downlink of a communication system, the second type of control information representing a coding mode to be applied in an uplink of the communication system. The artisan would have been motivated because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes; and when quick communication between the base station and the mobile station was not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages would be divided into smaller control signal segments; these smaller control signal segments would be interspersed between discrete speech signal segments.

8.2 As per Claim 24, **Roberts et al.** teaches the method of Claim 20. **Roberts et al.** teaches the transmission is in a downlink (downstream) of a communication system, the first type of control information representing synchronization information and various parameters such as path delay adjustment, initialization, activation, dynamic allocation messages, modem control messages etc applied to the downlink (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and the second type of control information representing multi-frame timing, out-of-band signaling and status and control messages associated with DS0 between Host digital terminal and the Integrated service unit (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9). **Roberts et al.** does not expressly teach that the transmission is in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink. **Le Strat et al.** teaches that the transmission is in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink (Fig. 9; CL7, L40-42), as the fixed part (the base transceiver station) modifies the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and transmits to the mobile station information on the coding and transmission modes (CL7, L30-42); as per **Balachandran et al.** the GSM system uses the Fast Associated Control Channel (FACCH) to send control signals in-band with speech transmission for quick communication between the cellular phone and the base station (CL2, L8-12); and as per **Wan** the base station should be provided with the coding mode and key needed to decode and demodulate the information coming from the mobile station (CL6, L21-23). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of

Roberts et al. with the method of **Le Strat et al.** so that the transmission was in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink. The artisan would have been motivated because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes; the GSM system would use the Fast Associated Control Channel (FACCH) to send control signals in-band with speech transmission for quick communication between the cellular phone and the base station; the base station should be provided with the coding mode and key needed to decode and demodulate the information coming from the mobile station.

Roberts et al. does not teach that the transmission is in an uplink of a communication system, the second type of control information representing a downlink quality measured in the downlink. **Le Strat et al.** teaches that the transmission is in an uplink of a communication system, the second type of control information representing a downlink quality measured in the downlink (CL7, L44-48 and CL14, L60-63), as the mobile station measures the transmission quality in the base station to the mobile station direction and transmits this information to the base station (CL7, L44-48); and the base station receives this quality information and uses it to modify the coding mode in each direction (CL7, L33-38); and as per **Balachandran et al.** when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages are divided

into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Le Strat et al.** so the transmission is in an uplink of a communication system, the second type of control information representing a downlink quality measured in the downlink. The artisan would have been motivated because the mobile station would measure the transmission quality in the base station to the mobile station direction and would transmit this information to the base station; and the base station would receive this quality information and would use it to modify the coding mode in each direction; and when quick communication between the base station and the mobile station was not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages would be divided into smaller control signal segments; these smaller control signal segments would be interspersed between discrete speech signal segments.

9. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558), in view of **Dahlin** (US Patent 5,199,031).

9.1 As per Claim 26, **Roberts et al.** teaches the method of Claim 25. **Roberts et al.** teaches modifying the DS0 by appending a ninth bit to carry multi-frame timing, signaling information and control/status information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9). **Roberts et al.** does not teach that the step of transmitting comprises channel encoding the data

and the section of the second type of control information. **Dahlin** teaches that the step of transmitting comprises channel encoding the data and the section of the second type of control information (Fig. 2, Items 102 and 104; CL4, L14-35), as that allows protecting important data bits in the speech code and providing a cyclic redundancy check (CL4, L31-35); and manipulating the incoming data to carry out error detection and correction (CL4, L25-29). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Dahlin** so that the step of transmitting comprised channel encoding the data and the section of the second type of control information. The artisan would have been motivated because that would allow protecting important data bits in the speech code and providing a cyclic redundancy check; and manipulating the incoming data to carry out error detection and correction.

9.2 As per Claim 27, **Roberts et al.** and **Dahlin** teach the method of Claim 26. **Roberts et al.** teaches transmitting with each frame of the multi-frame the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66). **Roberts et al.** does not teach channel coding the first type of control information. **Dahlin** teaches channel coding the first type of control information (Fig. 2, Items 102 and 104; CL4, L14-35), as that allows protecting important data bits in the speech code and providing a cyclic redundancy check (CL4, L31-35); and manipulating the incoming data to carry out error detection and correction (CL4, L25-29). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Dahlin** that included channel coding the first type of control information. The artisan

would have been motivated because that would allow protecting important data bits in the speech code and providing a cyclic redundancy check; and manipulating the incoming data to carry out error detection and correction.

9.3 As per Claim 28, **Roberts et al.** and **Dahlin** teach the method of Claim 27. **Roberts et al.** teaches frame formatting and interleaving the channel coded first type of control information, data and section of the second type of control information (Fig 13; CL38, L33-34; CL41, L55-66).

10. Claims 30, 31, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558), in view of **Balachandran et al.** (US Patent 5,881,105), and further in view of **Le Strat et al.** (US Patent 6,134,220).

10.1 As per Claim 30, **Roberts et al.** teaches the method of Claim 29. **Roberts et al.** does not expressly teach the step of decoding the received frames in accordance with a mode code derived from the first type of control information for each frame. **Balachandran et al.** teaches the step of decoding the received frames (CL1, L65 to CL2, L7; CL3, L34-66; it is inherent that messages that are encoded at the transmission side should be decoded at the receiving side), as that allows extracting the speech data from the frame (CL3, L33-43). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Balachandran et al.** that included the step of

decoding the received frames. The artisan would have been motivated because that would allow extracting the speech data from the frame.

Le Strat et al. teaches using different coding modes to allow for different bit rates and different coding efficiency; and the coding mode is changed by the base station based on the transmission quality in the base station to mobile station direction and transmitted to the mobile station, thus requiring decoding the received frames in accordance with a mode code derived from the first type of control information for each frame (CL3, L43-50; CL7, L6-11; CL7, L30-42), as the coding mode selected by the base station and transmitted to the mobile station depends on the quality of transmission required and the resources required (CL4, L41-50). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Balachandran et al.** and **Le Strat et al.** that included decoding the received frames in accordance with a mode code derived from the first type of control information for each frame. The artisan would have been motivated because the coding mode selected by the base station and transmitted to the mobile station would depend on the quality of transmission required and the resources required.

10.2 As per Claim 31, **Roberts et al.** teaches the method of Claim 29. **Roberts et al.** does not expressly teach encoding frames for transmission depending on the reformed second type of control information. **Balachandran et al.** teaches the step of encoding frames for transmission (CL1, L65 to CL2, L7; CL3, L34-66), as that allows encoding the speech data into the frame format (CL3, L33-43). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of

Balachandran et al. that included the step of encoding frames for transmission. The artisan would have been motivated because that would allow encoding the speech data into the frame format.

Balachandran et al. also teaches on receipt of the multi-frames reforming the second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

Le Strat et al. teaches using different coding modes to allow for different bit rates and different coding efficiency; and the coding mode is changed by the base station based on the transmission quality in the base station to mobile station direction and transmitted to the mobile station, thus requiring encoding frames for transmission depending on the reformed second type of control information (CL3, L43-50; CL7, L6-11; CL7, L30-42), as the coding mode selected by the base station and transmitted to the mobile station depends on the quality of transmission required and the resources required (CL4, L41-50); and as per **Balachandran et al.** when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages, such as the coding mode selected by the base station are divided into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52). It would have been obvious to one of ordinary skill in the art at the time

of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Balachandran et al.** and **Le Strat et al.** that included encoding frames for transmission depending on the reformed second type of control information. The artisan would have been motivated because the coding mode selected by the base station and transmitted to the mobile station would depend on the quality of transmission required and the resources required; and when quick communication between the base station and the mobile station was not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages, such as the coding mode selected by the base station would be divided into smaller control signal segments; these smaller control signal segments would be interspersed between discrete speech signal segments.

10.3 As per Claim 35, **Roberts et al.** teaches the multi-frame transmission communication system of Claim 34. **Roberts et al.** does not expressly teach that the second device is adapted to decode the frames of the multi-frame transmission in dependence on the first type of control information contained in a received frame. **Balachandran et al.** teaches that the second device is adapted to decode the frames of the multi-frame transmission (CL1, L65 to CL2, L7; CL3, L34-66; it is inherent that messages that are encoded at the transmission side should be decoded at the receiving side), as that allows extracting the speech data from the frame (CL3, L33-43). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the communication system of **Roberts et al.** with the communication system of **Balachandran et al.** that included the second device adapted to decode the frames of the

multi-frame transmission. The artisan would have been motivated because that would allow extracting the speech data from the frame.

Le Strat et al. teaches using different coding modes to allow for different bit rates and different coding efficiency; and the coding mode is changed by the base station based on the transmission quality in the base station to mobile station direction and transmitted to the mobile station, thus requiring the second device adapted to decode the frames of the multi-frame transmission in dependence on the first type of control information contained in a received frame (CL3, L43-50; CL7, L6-11; CL7, L30-42), as the coding mode selected by the base station and transmitted to the mobile station depends on the quality of transmission required and the resources required (CL4, L41-50). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the communication system of **Roberts et al.** with the communication system of **Balachandran et al.** and **Le Strat et al.** that included the second device is adapted to decode the frames of the multi-frame transmission in dependence on the first type of control information contained in a received frame. The artisan would have been motivated because the coding mode selected by the base station and transmitted to the mobile station would depend on the quality of transmission required and the resources required.

10.4 As per Claim 36, **Roberts et al.** teaches the multi-frame transmission communication system of Claim 35. **Roberts et al.** does not expressly teach that the second device further comprises encoding means for encoding data for transmission using a mode code based on the reformed second control information and transmission means for transmitting the encoded data to the first device. **Balachandran et al.** teaches the second device further comprises encoding

means for encoding data for transmission (CL3, L34-66), as that allows encoding the speech data into the frame format (CL3, L33-43). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the communication system of **Roberts et al.** with the communication system of **Balachandran et al.** that included the second device further comprising encoding means for encoding data for transmission. The artisan would have been motivated because that would allow encoding the speech data into the frame format.

Balachandran et al. also teaches on receipt of the multi-frames reforming the second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

Le Strat et al. teaches using different coding modes to allow for different bit rates and different coding efficiency; and the coding mode is changed by the base station based on the transmission quality in the base station to mobile station and transmitted to the mobile station, thus requiring encoding means for encoding data for transmission using a mode code based on the reformed second control information and transmission means for transmitting the encoded data to the first device (CL3, L43-50; CL7, L6-11; CL7, L30-42), as the coding mode selected by the base station and transmitted to the mobile station depends on the quality of transmission required and the resources required (CL4, L41-50); and as per **Balachandran et al.** when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to

shorten the length of the FACCH message, the FACCH and other control messages, such as the coding mode selected by the base station are divided into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the communication system of **Roberts et al.** with the communication system of **Balachandran et al.** and **Le Strat et al.** that included the second device further comprising encoding means for encoding data for transmission using a mode code based on the reformed second control information and transmission means for transmitting the encoded data to the first device. The artisan would have been motivated because the coding mode selected by the base station and transmitted to the mobile station would depend on the quality of transmission required and the resources required; and when quick communication between the base station and the mobile station was not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages, such as the coding mode selected by the base station would be divided into smaller control signal segments; these smaller control signal segments would be interspersed between discrete speech signal segments.

Response to Arguments

11. Applicant's arguments filed on March 10, 2005 have been fully considered. The arguments with respect to claim rejections under 35 USC 112 First paragraph, 35 USC 102 (e) and 35 USC 103 (a) made on March 10, 2005 are not persuasive.

12. As per the applicants' arguments, the applicants' attention is requested to the corresponding claim rejections. In addition, the following explanation is provided to further explain the examiner's position.

12.1 As per the applicants' argument that "the Examiner seems to infer that the six-frame multi-frame is the multi-frame referred to in the claims; this is not the case; the multi-frame is actually the multiple frames required to transmit the partitioned bits; ... thus the multi-frame, in the context of claim 20, is defined by the number of sections into which the control information is partitioned; ... there is described an embodiment in which a multi-frame of six frames is described. there it states that three frames of the multi-frame of six frames are required to transmit the partitioned three bit coding mode information; this does not negate support for a claim that requires the number of sections into which the coding mode is partitioned to correspond with the number of frames in the multi-frame; first of all, the claim require correspondence,... not one to one correspondence; the definition of the term correspondence is not so narrow, and merely requires agreement; thus, correspondence between the number of frames and the number of sections merely requires that there be sufficient frames in the multi-frame to accommodate the sections into which the partitioned control information is paused. ... there is no reason to read the six-frame multi-frame described on page 4 as a lack of support for a claim directed to a method in which the number of frames in the multi-frame sequence is defined by the number of sections into which the coding mode is partitioned; the number of sections corresponding to the number of frames in the multi-frame as not being

supported by the specification; nothing in the specification requires one-to-one correspondence between the number of frames and the number of sections", the Examiner takes the position that the Applicants' **definition of the multi-frame** and **correspondence between the number of frames in the multi-frame and number of sections** has no support in the original specification and the claims filed on 16, July 1999. Therefore, this definition of the multi-frame and correspondence is **new material introduced by the applicants** in the amendment dated September 28, 2004. The Examiner rejects these arguments, as they have **no basis and no support in the original specification**. If the applicants disagree with the Examiner, they are directed to show the specification location (Page and Line numbers), where their arguments are supported. The Examiner finds no support to the applicants' arguments in the specification and therefore, **maintains the claim rejections based on 112 First Paragraph**.

12.2 As per the applicants' argument that "Claim 37 is amended to recite that the uplink is established between the second device and the first device; the applicants are confused about the Examiner's rejection of claim 38; that claim seems to correctly identify the downlink from the first device (the fixed part with the transmitter) to the second device (the mobile part with the receiver); indeed this language is consistent with the Examiner's expressed understanding of a GSM system (where the downlink goes from the fixed part to the moving part); since the Examiner is apparently of the view that the fixed part is the first device and the mobile part is the second device, the applicants do not understand the basis for the Examiner's conclusion; indeed the Examiner's objection seems to contradict the Examiner's observation that the fixed part (the first device) contains the transmitter and the mobile part (the second device) contains the receiver

in the downlink; the applicants believe that the relationship between the first device and the second device is correctly set forth in claim 37", the Examiner respectfully disagrees.

Referring to Fig. 3 of the specification and the description for the fixed part 1, and mobile part 2, (Page 8, Lines 1-2; page 8, Lines 25-26), each part has a partitioning and coding means (part 10 of the fixed part and part 20 of the mobile part, Page 8, Lines 4-7 and Page 8, Line 28 to Page 9, Line 2); and each of the fixed and mobile part has a transmitter means (parts 14 and 15 of fixed part 1 and parts 24 and 25 of mobile part 2, Page 8, Lines 9-12 and Page 9, Lines 5-7. Each of the fixed and mobile parts has a receiver means (part 25 of the mobile part, Page 8, Line 13; part 15 of the fixed part, Page 9, Line 9).

Therefore, claiming that there is an ***uplink established from the second device to the first device*** is incorrect, as the uplink is established from the mobile part to the fixed part, where each part has a partitioning means, a transmitter means and a receiver means. Therefore, "there is an ***uplink established from the second device to the first device***" is not supported by the specification.

Similarly, claiming that there is ***downlink established from the first device to the second device*** is incorrect, as the downlink is established from the fixed part to the mobile part where each part has a partitioning means, a transmitter means and a receiver means. Therefore, "there is ***downlink established from the first device to the second device***" is not supported by the specification.

12.3 As per the applicants' argument that "Roberts et al. does not describe the use of a first and second type of control information where the second type of control information is partitioned into the number of frames in a multi-frame; even a cursory reading of Roberts reveals that it does not convey a concept of partitioning a second type of control information corresponding to the number of frames in the multi-frame; ... there is no discussion of partitioning signaling bits; in fact, the ninth bit is described as carrying a pattern which is updated each frame; this would seem to teach away from the concept of partitioning a control word for future frames (the second type of control information) and distributing each section among the frames of a multi-frame sequence; because Roberts fails to disclose a method in which a second type of control information is 1) partitioned and 2) transmitted with each frame of a multi-frame, Roberts et al. fails to anticipate applicants' claim 20; ... Roberts et al. does not disclose or suggest partitioning a second type of control information (e.g. a codeword) and distributing that partitioned control information among frames in a multi-frame sequence", the Examiner respectfully disagrees.

Roberts et al. teaches a method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); and a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the method comprising partitioning the second type of control information into a number of sections corresponding to the number of frames in the multi-frame (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9; as shown in Tables 9 and 10 of CL99, the control bits are partitioned

into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36).

In addition, **Balachandran et al.** teaches a method of transmission in a multi-frame system (Fig. 1; CL3, L34 to CL4, L2), each frame of the multi-frame system being associated with a first type of control information (CL1, L65 to CL2, L24); and a second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2); the method comprising partitioning the second type of control information into a number of sections corresponding to the number of frames in the multi-frame (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2); and transmitting with each frame of the multi-frame the first type of control information for the respective frame (CL1, L65 to CL2, L24); and a section of the partitioned second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing.

In addition, the Examiner has taken the position that the "partitioning a second type of control information corresponding to the number of frames in the multi-frame" is not supported in the specification and it is new material introduced by the applicants in the amendment of September 28, 2004. Similarly, "control information partitioned and transmitted with each frame of the multi-frame" is also not supported by the specification and it is new material.

12.4 As per the applicants' argument that "Claim 29 ... requires receiving the frames and reforming the sections into the second type of control information; such a method is not taught

by Roberts et ,al. Roberts et al. does not disclose or suggest partitioning the second type of control information among sections in multi-frames and reforming those sections into the second type of control information; ... the cited portion of Roberts et al. ... ninth bit is not a partitioned sequence which is reformed into a second type of control information; the command described in column 99, line 40 to column 100, line 21 may be formed, but it is most certainly not reformed", the Examiner respectfully disagrees.

Roberts et al. also teaches on receipt of the multi-frames, reforming the second type of control information (CL98, L62 to CL100, L21; Tables 9 and 10; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

In addition, **Balachandran et al.** teaches on receipt of the multi-frames, reforming the second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

12.5 As per the applicants' argument that "Roberts et al. fails to disclose a second type of control information (as defined by applicants a second type of control information is information

not related to the current frame); in Roberts et al., the signaling bit is related to the current frame and is not partitioned into a number of sections corresponding to the number of frames in the multi-frame; in Roberts et al. there is simply no concept of taking control information and partitioning that information; in Roberts et al., the individual signaling bits have meaning; it is the individual bits that convey information in the frame in which they are placed, not a codeword assembled from the individual bits that is used in later frames", the Examiner directs the applicants' attention to Paragraph 12.3 and 12.4 above.

12.6 As per the applicants' argument that "Le Strat does not teach transmitting the coding mode in the downlink in a partitioned manner and using that partitioned coding word (reformed) as a code word in the uplink", the Examiner has used **Le Strat et al.** with **Balachandran et al.**

Le Strat et al. teaches that the transmission is in a downlink of a communication system, the second type of control information representing a coding mode to be applied in an uplink of the communication system (Fig. 9, Item 98; CL7, L40-42), as the fixed part (the base transceiver station) modifies the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and transmits to the mobile station information on the coding and transmission modes (CL7, L30-42); and as per **Balachandran et al.** when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages are divided

into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52).

Balachandran et al. also teaches on receipt of the multi-frames reforming the second type of control information (Abstract, L7-13; CL2, L31-52; CL2, L56 to CL3, L2; the control transmissions are divided into a plurality of discrete control segments, which are transmitted non-sequentially throughout the speech transmission and queued at the receiving end; after the receipt of all of the control segments, the original control message is reconstructed and forwarded for processing).

12.7 As per the applicants' argument that "Le Strat does not disclose or suggest transmitting two types of control information, one partitioned and one not, wherein the partitioned information is allocated among multiple frames in a multi-frame", the Examiner has used **Le Strat et al.** with **Balachandran et al.**

Balachandran et al. the GSM system uses the Fast Associated Control Channel (FACCH) to send control signals in-band with speech transmission for quick communication between the base station and the cellular phone (CL2, L8-12). **Balachandran et al.** when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages are divided into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52).

Balachandran et al. teaches that when quick communication between the base station and the mobile station is not required, in order to minimize the interruption of speech data caused by FACCH and other control messages and to shorten the length of the FACCH message, the FACCH and other control messages are divided into smaller control signal segments; these smaller control signal segments are interspersed between discrete speech signal segments (CL2, L10-12; CL2, L31-52).

12.8 As per the applicants' argument that "While Dahlin does describe data manipulation, the manipulation described can hardly be characterized as partitioning the information among multiple frames for use as control information in another link of the system", the Examiner has used **Roberts et al.** and **Balachandran et al.** The Examiner directs applicants' attention to Paragraph 12.3 above.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
June 3, 2005l